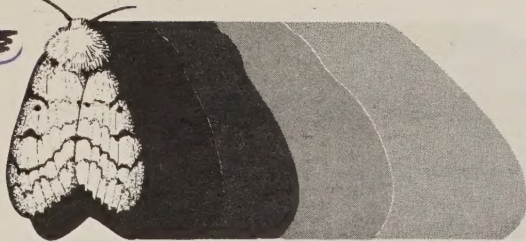


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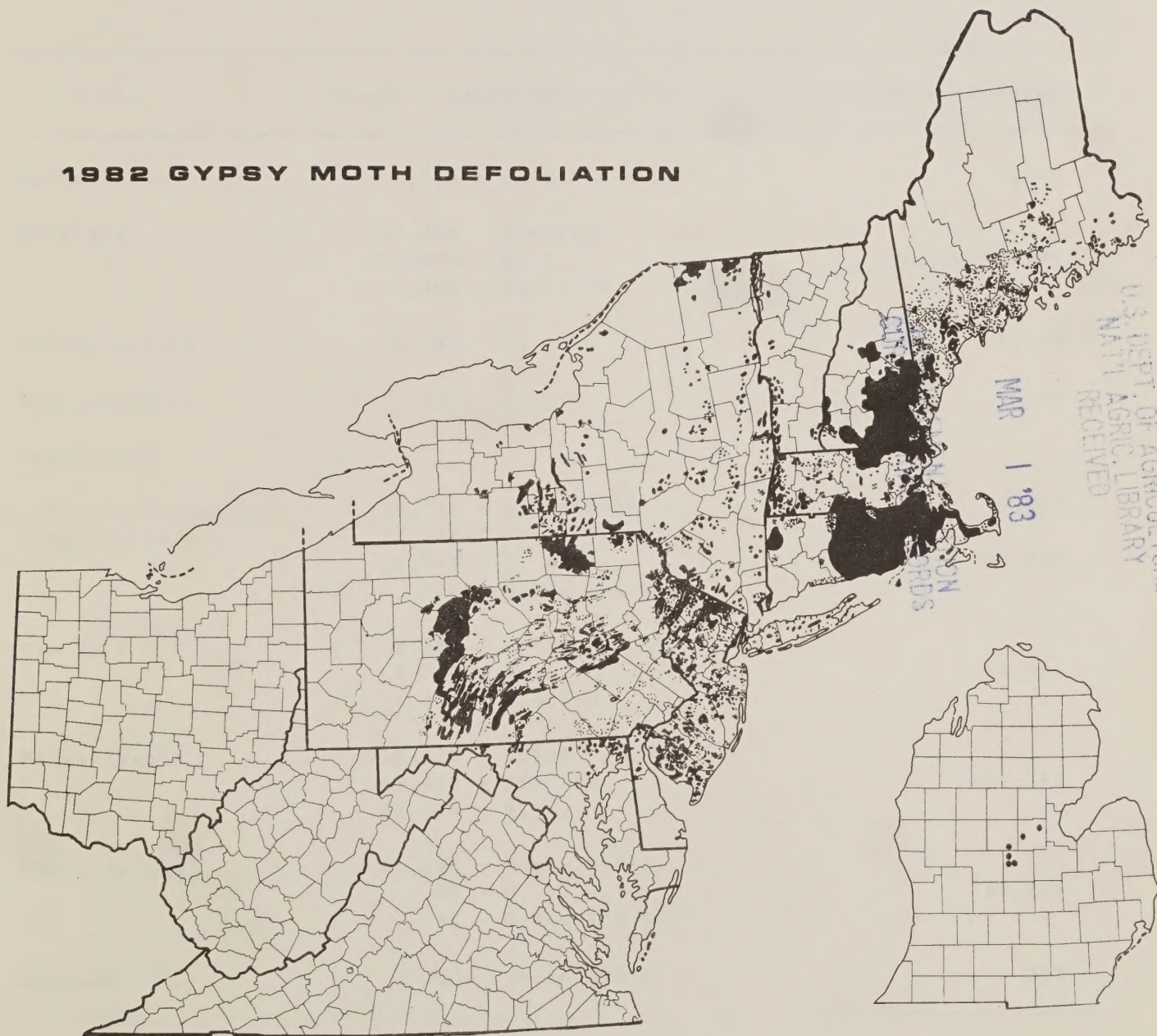
JANUARY 1983

NUMBER SIX

# GYPSY MOTH NEWS

370 REED ROAD, BROOMALL, PA 19008  
U.S.D.A., FOREST SERVICE

## 1982 GYPSY MOTH DEFOLIATION



(MICHIGAN)

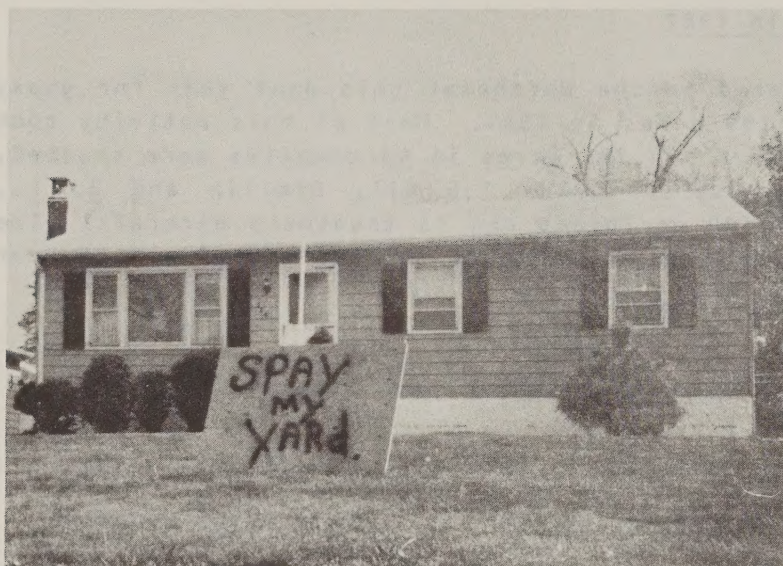


## SUPPRESSION UP, DEFOLIATION DOWN IN 1982

A total of 726,757 acres was treated in the Northeast this past year for gypsy moth suppression compared to 350,299 acres in 1981. Most of this activity took place in Pennsylvania, where a record 494,742 acres in 43 counties were treated. The project, which involved the use of Dylox 1.5 Oil, Dimilin and B. t., necessitated coordination of over 300 employees and 33 treatment aircraft! The State of Maryland in the meantime conducted a highly successful project on over 48,000 acres in 1982.

### 1982 Cooperative Gypsy Moth Suppression Projects

State	Acres Treated/Insecticide	Total Acres Treated
Maine	1,910 - <u>B. t.</u>	1,910
Maryland	29,828 - Dimilin 11,470 - <u>B. t.</u> 7,066 - Sevin FR	48,364
Massachusetts	4,160 - <u>B. t.</u>	4,160
New Hampshire	440 - <u>B. t.</u>	440
New Jersey		
Forest Management	12,741 - Sevin 4-Oil	12,741
Agriculture	75,441 - Sevin 4-Oil 13,049 - <u>B. t.</u> 510 - Dylox 1.5 Oil	89,000
New York	5,282 - Dylox 1.5 Oil 2,706 - <u>B. t.</u> 2,296 - Dimilin	10,284
Pennsylvania	416,374 - Dylox 1.5 Oil 45,694 - Dimilin 32,674 - <u>B. t.</u>	494,742
Rhode Island	64,722 - Sevin 4-Oil 61 - <u>B. t.</u> 33 - Dylox 1.5 Oil	64,816
Vermont	300 - Sevin 4-Oil	300
Total		726,757



Strong on support, although a little short on spelling. According to State sources, the 1982 suppression project in Maryland was accepted by over 99 percent of the public directly involved in the program.

In 1982 gypsy moth defoliated over 8.1 million acres of hardwood forests in the Northeast and Michigan. This is a 37 percent decrease from 1981. It is, however, 50 percent larger than the 1980 record. Increases were recorded from the following States: Delaware, Maryland, Michigan, and Rhode Island.

#### Area Defoliated by Gypsy Moth, 1981-1982

State	1981	1982	Trend (percent)
Connecticut	1,482,216	803,802	- 46
Delaware	500	1,265	+ 153
Maine	655,841	574,537	- 12
Maryland	8,826	9,162 <sup>1/</sup>	+ 4
Massachusetts	2,826,095	1,383,265	- 51
Michigan	18	92	+ 411
New Hampshire	1,947,236	878,273	- 55
New Jersey	798,790	675,985	- 15
New York	2,303,915 <sup>2/</sup>	825,629	- 64
Pennsylvania	2,527,753	2,351,317	- 7
Rhode Island	272,556	658,000	+ 141
Vermont	48,979	9,864	- 80
Total	12,872,725	8,171,191	- 36.5

<sup>1/</sup> Includes 42 acres of light defoliation detected on Catoclin Mountain Park, not reported by Maryland.

<sup>2/</sup> Nassau County and New York City counties were not surveyed although defoliation did occur.

## OUTLYING INFESTATIONS PURSUED

USDA Animal and Plant Health Inspection Service (APHIS) reports that treatments were applied to 38 isolated infestations in 14 States this past season. Besides insecticides, some of these treatments also involved sterile male moth releases (Berrien County, Michigan, and Horry County, South Carolina) and mass trapping techniques (Dane and Waukesha Counties, Wisconsin; Lancaster County, Nebraska; and King County, Washington).

Based on male moth catches occurring more than 100 miles beyond the regulated area, new infestations have already been identified in the following locations:

<u>State</u>	<u>County</u>	<u>State</u>	<u>County</u>
CALIFORNIA	Alameda Contra Costa Los Angeles Marin Santa Clara	OHIO	Franklin Hamilton Lucas Montgomery
ILLINOIS	Kane Lake	SOUTH CAROLINA	Horry
INDIANA	Elkhart Bartholomew	SOUTH DAKOTA	Custer
MINNESOTA	Ramsey Washington	WASHINGTON	Pierce
		WISCONSIN	Milwaukee

APHIS also reports that multiple male catches were found in 114 counties Nationwide representing 18 States.

## THE MIDWEST REPORTS

### Michigan

Eradication is the major component of gypsy moth management in Michigan. However, the State continued to seek alternatives to chemical insecticides through: (1) application of the microbial insecticides B. t. and gypsy moth virus; (2) applications of B. t. followed by application of gypsy moth pheromone; and (3) release of the egg parasite Ooencyrtus kuvanae. The Michigan Department of Agriculture again cooperated with USDA in the sterile male release project near Benton Harbor (p. 6, "Sterile Male Projects Progressing").

Outlying infestations totaling 3,400 acres in 5 Michigan counties were treated in 1982 with 2 applications of Sevin 4-0il. These plots will be monitored with pheromone traps in 1983. Approximately 16,000 pheromone traps were placed in about 50 counties this year. Male moth catches and distribution appear similar to that in 1981.

## Ohio

The Ohio Department of Natural Resources (ODNR) reports that approximately 2,000 acres in 16 areas were treated in 1982 with 2 applications of either Sevin 4-Oil or Dylox 1.5 Oil. The project, conducted in cooperation between the Ohio Department of Agriculture, ODNR, and USDA was carried out without problem.

State-wide gypsy moth trapping in Ohio yielded about 2,500 moths in 52 counties. Most of the moths were caught in eastern counties bordering Pennsylvania. Of special concern are three areas: Hamilton County (Cincinnati), Lucas County (near Toledo) and Franklin County (Columbus area). Field evaluations are now underway.

## Indiana

The State of Indiana conducted one eradication project near Terre Haute, Indiana, in 1982. No moths were trapped in the area this year. The treatment will be considered successful if no moths are caught in 1983.

In the trapping program, 476 gypsy moth males had been caught in 20 counties as of September. Of that number, 15 counties had not recorded positive trap catches in 1981. Known infestations have been found in the towns of Goshen (Elkhart County) and Columbus (Bartholomew County). Recent surveys in Goshen turned up enough egg masses to fill a 1-pound coffee can. The infestation in Columbus is centered around a home whose owner recently moved from Connecticut carrying egg masses on his boat and trailer. These two infestation centers are candidates for eradication treatments next year.

With gypsy moth activity increasing in Indiana, the State has undertaken efforts to develop a State-wide management program. A gypsy moth technical advisory Committee was formed this past summer in order to gain State Legislative support for funding a gypsy moth program and to start a State-wide information and education program.

## INFESTATIONS TREATED IN NORTH CAROLINA

Based upon evaluation of 7,000 gypsy moth traps deployed in 1981, action was taken this past summer to eradicate two confirmed spot infestations.

The first spot, located at a KOA campground in Selma (Johnston County) was treated with two applications of Dimilin W-25 applied at a rate of .06 pound per acre in 1 gallon of water. The first application was made on April 15, immediately after peak egg hatch, with the second application made 12 days later. Treatments were scheduled to begin at 11:00 a.m. which allowed time for travelers to leave the trailer park. Areas around a pond and along I-95 were treated from the ground.

The second spot infestation, located near Raleigh (Wake County) was treated with two applications of Bacillus thuringiensis applied at the rate of 8 BIU's per acre in 1 gallon of formulation. Rhoplex B-60A sticker (2 percent) was also used. The first application was made on April 23 with the second application completed on May 5.

Both treatments were supplemented with mass trapping at the rate of 4 to 10 traps per acre. No moths were caught in Selma; however, 9 male moths were caught in the Raleigh site.

#### GYPSY MOTH GAINS Foothold IN WEST VIRGINIA

Thousands of gypsy moth larvae were collected in Jefferson, Morgan and Berkeley Counties this past year. Lesser numbers were also caught in the northern portions of Hampshire and Mineral Counties. As a result, the West Virginia Department of Agriculture (WVDA) expects scattered pockets of light to heavy defoliation to occur in these counties, particularly in areas along the Maryland-West Virginia border.

Male moth trapping results to date have identified the following new records: Tyler, Doddridge, Ritchie, Mason, Nicholas, Mercer, Upshur and Webster Counties. This makes a cumulative total of 34 counties in which gypsy moth males have been caught since the trapping program began.

While no eradication work was conducted in 1982, the WVDA continued their biological control program with the release of Apanteles flavicoxis in infested areas. The State also noted that the egg parasite Ooencyrtus kuvanae has been found in large quantities in Jefferson, Berkeley, Morgan and Hampshire Counties.

In a related item, a West Virginia Gypsy Moth Committee was formed this past year. Comprised of State, local and Federal government representatives, private industry, private citizens and organized groups such as the West Virginia Beekeepers Association, the Committee has taken a very active role in urging the State to develop a gypsy moth management program.

#### B.T. SINGLE APPLICATIONS SUCCESSFUL

Single applications of B. t. at 12 Billion International Units (BIU's) per acre received tremendous interest by researchers and pest managers alike this past season. The States of Maine, Maryland, Massachusetts, New Hampshire and Pennsylvania all used the new technique in their Cooperative Gypsy Moth Suppression Projects. Project costs were competitive with the chemical insecticides and pest managers were generally pleased with project efficacy.

USDA scientists conducted small scale field tests to evaluate single applications of B. t. One test was conducted by the Northeastern Forest Experiment Station (Hamden, Connecticut) in cooperation with the Connecticut Department of Environmental Resources and Connecticut Agricultural Experiment Station. The effectiveness of the standard double application (7-10 days apart) of B.t. at 8 BIU's per acre was compared to single applications of 12 BIU's and 16 BIU's per acre. All materials were applied at 128 ounces of finished formulation per acre. According to Forest Service scientist Dr. Frank Lewis, the test results indicate that the single applications of 12 and 16 BIU's provided population reduction and foliage protection equal to the double application of 8 BIU's. These results were obtained against dense gypsy moth populations (10,000 to 20,000 egg masses per acre) which exhibited little or no population collapse. The same general results were obtained in a similar project conducted by the USDA's Methods Development Center (Cape Cod, Massachusetts).

### STERILE MALE PROJECTS PROGRESSING

A cooperative project involving USDA Animal and Plant Health Inspection Service (APHIS), Forest Service and the South Carolina Department of Agriculture was initiated in Horry County, South Carolina, this year to evaluate the "inherited sterility" control method. In this technique, female moths mate with partially sterile males and lay egg masses which hatch the following year. The resulting F1 progeny develop normally into competitive, but totally sterile, adult moths. This phenomenon substantially improves the economic outlook for using the sterile male technique since effects of a release should be felt over 2 generations.

According to Dr. Charles Schwalbe, Director of the Otis Methods Development Center at Cape Cod, Massachusetts, the program proceeded according to plan culminating with the release of approximately 320,000 partially sterile males into a well-defined, isolated infestation. Target overflooding ratios were achieved and assessment in 1983 will determine if and, to what extent, sterility appears in the field population next season.

In a related project, USDA scientists completed the third year release of fully sterile male moths in the Benton Harbor, Michigan, pilot test. Surveys in 1980 and 1981 resulted in the capture of 274 and 50 moths, respectively. Analysis of this data indicated that 1.08 moths should be captured in 1982, and indeed, only 1 male moth was captured in the project area. Scientists are rechecking the traps for the missing 0.08 moth. The tentative conclusion is that eradication has been achieved in Benton Harbor. Final evaluation trapping is planned in 1983.

Supportive to these types of projects are improvements in gypsy moth rearing operations. A significant advance was made at the Otis Methods Development Center, with the implementation of a mechanical egg dispensing machine. Use of this equipment during the 1982 rearing program cut labor costs 80 percent! The technology is fundamental to mechanizing rearing and with economizing the production of biological control agents that may be used in gypsy moth management.

### SOVIET SCIENTISTS OBSERVE GYPSY MOTH ACTIVITIES

A delegation of two Soviet forest protection specialists toured the Northeastern United States from June 7 through June 17, 1982, as the guests of the USDA Forest Service, Forest Insect and Disease Research and Forest Pest Management. George Timchenko of the Ukrainian Forestry Research Institute in Kharkov headed the delegation. Vladimir Znamenskiy of the All-Union Scientific Research Institute at Puskino near Moscow was the other member of the team. George was interested in observing gypsy moth control operations while Vladimir made observations of populations dynamics research. During the first week, they were shown gypsy moth outbreaks in central Pennsylvania near Lewistown; then, control operations were observed northwest of Wilkes-Barre. During the second week, field observations of gypsy moth predator research and larval behavior research took the delegation to Vermont, Rhode Island and Connecticut.



Discussion on spray block layout and design involved (from left to right) Tony Santoli, (Assistant District Forester, Pennsylvania Bureau of Forestry), Janice Gay (Wyoming County Spray Coordinator), George Timchenko (Ukranian Forestry Research Institute), Miro Czapowskyj (USDA Forest Service interpreter), Valdimir Znamenskiy (All-Union Scientific Research Institute).



Aerial application techniques for orienting helicopter and observing spray swath width are presented by Bob Gass (pilot, Chesapeake and Potomac Airways, Inc.) (right) to George Timchenko with Miro Czapowskyj (center) translating for Valdimir Znamenskiy as Tony Santoli (left) comments.

### PENNSYLVANIA TO USE MORE B.T. IN 1983

Pennsylvania Governor Dick Thornburgh and Department of Environmental Resources Secretary Peter Duncan announced on October 9 that most of the State-conducted gypsy moth suppression work next season will involve the use of B. t. The decision was based upon the favorable results obtained on the 32,674 acres treated with B. t. in 1982 and cost competitiveness of the material with chemical insecticides.

The use of B. t. will virtually eliminate the ever increasing objector problems and need for 500-foot buffer zones associated with the use of chemical insecticides. There are no restrictions placed on the use of B. t. by the Environmental Protection Agency and its use is strongly endorsed by environmental groups throughout the Commonwealth. It is noteworthy that the option of using a chemical insecticide will be reserved for use in critical areas where B. t. may not be capable of controlling the problem.

### EVALUATING PANORAMIC AERIAL PHOTOGRAPHY FOR MAPPING GYPSY MOTH DEFOLIATION

In a cooperative effort between USDA Forest Service and Pennsylvania Department of Environmental Resources, gypsy moth defoliation was mapped from high altitude panoramic color infrared photography over a 2,800 square mile test site in central Pennsylvania during 1981. The 1:32,500 scale photography was obtained with the Itek IRIS-II optical bar panoramic camera system on board a NASA U-2 aircraft flying at about 65,000 feet.

Defoliated areas were identified and classified into two categories (partial and total); then sketched onto USGS 7½-minute quadrangle maps. The resulting maps were compared with identical scale maps independently produced by Pennsylvania's operational aerial sketch map surveys. Fifty-five percent of the defoliation classifications were in agreement. Of the remaining areas, 37.7 percent were cases where photointerpretation was more conservative than sketch mapping. In only 7.2 percent of the cases did photo interpreters classify areas into a more intensive damage category than sketch mappers. These points are attributed to the fact that the photography preceded the sketch map by 1 to 3 weeks during which time more larval feeding occurred. This peak damage was not photographed, but was readily seen by later aerial observers.

Based on aerial survey cost data from Pennsylvania and a comparable aerial photo NASA mission in Colorado, panoramic aerial photography is 1.7 times more expensive than aerial sketch mapping, but half as expensive as conventional 9x9 inch aerial photography at scales of 1:15,840 and less.

In conclusion, panoramic aerial photography is cost competitive with aerial sketch mapping for defoliation. Accurate damage categorization depends on timing the photographic mission with peak defoliation. Since photography provides a permanent record of defoliation, foliage protection from aerial pesticide application may be discernible. The feasibility of using panoramic photography for this purpose will be examined with the data from this test site in the near future. Also, plans are being made to demonstrate the operational use of aerial panoramic photography for mapping gypsy moth defoliation next summer throughout the eastern two-thirds of Pennsylvania, and in all of New Jersey, Delaware and Maryland.

## MASS TRAPPING FOR ERADICATION

There has been increasing interest in the use of mass trapping for eradication of low-level isolated infestations. Demonstration projects underway in Wisconsin and Washington will provide operational assessment of the effectiveness of that approach. Field tests performed with simulated populations in Massachusetts have shown that trap density must be compatible with insect density if mating is to be prevented and that the total number of moths captured is not as important as how soon they are caught. As expected, males can mate before being captured in traps and mass trapping requires that these events be reversed.

In other work with gypsy moth pheromones, Agricultural Research Service scientists attempted to find out whether superior mating disruption is facilitated by a large number of sources releasing low pheromone dosages, or a small number of sources releasing large amounts of pheromone. The test was carried out in 10-acre blocks. Treatments included: (1) a 3x3 grid with 2 grams of pheromone per grid spot, (2) a 9x9 grid with 0.2 grams per grid spot, and (3) a 25x25 grid with 0.025 grams per grid spot. Total pheromone dosage per treatment area was 40 grams per acre.

The two highest density grids each achieved 95 percent mating disruption compared to control plots; however, mating disruption was appreciably less (65-75 percent) in the 3x3 grid. This suggests that there is a limit to how dilute a release source grid can be and still maintain effectiveness.

## COMMERCIAL PRODUCTS FOR HOMEOWNER USE EVALUATED

Research studies conducted by USDA Agricultural Research Service (ARS) in 1982 emphasized tactics that could be used by the homeowner. With the gypsy moth invading more residential areas each year, there is a need for safe, readily available products for homeowner use, according to ARS scientists Ralph Webb and Gary Okey.

Treatment of egg masses can control populations before first instar dispersal occurs, and represents one method that can be locally employed by homeowners. A number of pesticide and nonpesticide products were field evaluated early in April 1982. Among the insecticides tested, bendiocarb at  $\frac{1}{2}$  or 1 pound active ingredient per 100 gallons gave excellent control, as did several proprietary products sent by Johnson's Wax for evaluation. Surfactants such as Exhault 100, Biofilm, and Hydrowet, at full strength as well as a cleansing pine oil product, Breath-O-Pine at full strength or at a 25 percent dilution, gave complete egg mass kill. Neem seed extract 1:1 with ethanol also prevented hatch.

Commercially available insecticidal or barrier tree "bands" were evaluated on suburban oak trees in order to determine effectiveness and subsequent utility in suburban IPM programs. The products evaluated were "Slick and Stick," "Bag-a-Bug Tape," "Repel'M I" tape, "Repel'M II" tape, "Tree Tanglefoot," "Band and Kill," and "Bug Glue." Although attempts were made to follow the directions, none of the products proved to be effective barriers as utilized in these tests.

For the second year, commercially available gypsy moth male traps were compared for effectiveness against the standard USDA "milk carton" trap. Only the Hercon "Single Season Trap," which is a variation of the USDA trap, consistently caught as well or better than the standard trap. Additionally, this trap seemed less prone to damage by rodents seeking access to the dead trapped moths.

#### GYPSY MOTH HAIRS LINKED TO RASHES

In an article presented in the May 27 New England Journal of Medicine (Volume 306, Number 21) physicians describe the results of a closed-patch test in which 8 patients with presumed gypsy moth caterpillar rashes and 11 controls were treated with hairs from dead gypsy moth larvae. Reactions were noted in all of the test group and in one of the individuals in the control group after a 48-hour period. However, when patches were removed from some of the test group prior to the 48-hour period, several exhibited no signs of immediate reactivity, suggesting that reactions may be delayed in some similar way to that in poison-ivy rashes. Although hypersensitivity to caterpillars has been documented in the past, the researchers were surprised at the intensity of the reaction in some of the test group, "with some patients being unable to sleep at night", and others requiring injections of corticosteroids for relief.

In a related article in the same Journal, Forest Service and medical researchers report that extracts obtained from whole first instar larvae and extracts from the setae of older larvae both contained histamine, a substance known to cause welts if administered under the skin. The article further states that gypsy moth-caused rashes can result from contact with wind-blown setae or direct contact with the larvae, and describes a simple procedure for identifying a gypsy moth-caused rash.

#### GYPSY MOTH IMPACT UPDATE

People who have to make cost-effective decisions about managing for gypsy moth need help in predicting and evaluating its impacts. How much damage can we expect from an outbreak? Which forest stands will suffer most? What management strategies will yield the best returns to program dollars? The answers depend on a number of interrelated factors such as the frequency and intensity of attack, the susceptibility of host trees, the effectiveness of control programs, and the influence of natural phenomena such as predators and weather. Because these factors are difficult to predict, we have not been able to accurately forecast impacts of the pest. But, we can turn to recent experiences for some help. Data collected by USDA Forest Service during the 1970's from infested forest stands in Pennsylvania, give us an indication of what to expect.

In this case study, a few stands lost more than half of their trees between 1971 and 1979. In some instances, losses in timber inventory exceeded 20 cords of total volume and 5,000 board feet of sawtimber per acre. One stand recorded timber value losses of \$375 per acre. But losses this great were rare. On average, gains outnumbered declines. More than 70 percent of the stands have more timber volume and value now than they did before the outbreak. Moreover, the gypsy moth had very little impact on stand stocking levels. Before the outbreak, a preponderance of the infested stands were in full or overstocked

condition. They still are. The number of understocked stands has increased, but barring further damage most of these will grow back to a fully-stocked condition in a few years. Oak species, a preferred food of gypsy moth, were hit hardest. Before the outbreak, oaks averaged about 50 square feet of basal area per acre or nearly three-fifths of total stand stocking. By 1979, oak basal area was down to about 40 square feet per acre; less than half of total stocking. Oak stocking is down, but species less vulnerable to the insect such as red maple, hickory, black gum, ash, and yellow poplar are more prevalent now.

So, on the whole, it appears that things are not as bad as they might have been. Of course, this rather optimistic view of the overall situation offers little solace to those forest landowners who suffered heavy tree and timber losses to the pest. These are the people that planners of cost-effective control programs have to be most concerned about. Operational decisionmaking guides must be able to help us determine not only how many forest stands to protect, but also which ones. Techniques for predicting stand losses, using easy-to-measure key characteristics of stand condition such as tree vigor and species composition, have been developed and are now being tested and refined in cooperation with the Pennsylvania Bureau of Forestry.

#### COPING WITH GYPSY MOTH

"Coping with the gypsy moth" was the theme of a conference sponsored for natural resource managers last winter by the School of Forest Resources and the Cooperative Extension Service of Pennsylvania State University.

Papers delivered at the conference covered a broad spectrum of topics related to the gypsy moth problem in this country. Specific issues included life history of the moth, history of its spread and future outlook, damage to timber types, physiological effects of defoliation on trees, utilization of insect killed trees, the impact of the pest on the timber resource, choosing an insecticide, and parasites and predators.

Copies of the conference proceedings may be obtained by sending \$6 to:

Agriculture Conference Coordinator  
Pennsylvania State University  
409 J. O. Keller Building  
University Park, Pennsylvania 16802

#### MOTH FILM AVAILABLE AGAIN

For those who have not heard, the popular color film "The Gypsy Moth: A Dilemma" is again available for purchase in either 16 mm format or video cassette. For further information, write to:

Encyclopedia Britannica Educational Corporation  
424 North Michigan Avenue  
Chicago, Illinois 60611

## NEW GYPSY MOTH PUBLICATIONS

Two new gypsy moth publications have been issued this past year.

"Useful and Useless Techniques" for controlling the gypsy moth is the theme of a new brochure prepared by the Society for the Protection of New Hampshire Forests with the assistance of the New Hampshire Extension Service.

The illustrated pamphlet includes sections on the life stages, natural controls, mechanical controls, biological and chemical pesticides and general care of trees to defend against the gypsy moth. It also asks the question: Is control possible? and answers with straightforward information. Individual copies may be obtained by contacting:

Society for the Protection of New Hampshire Forests  
54 Portsmouth Street  
Concord, New Hampshire 03301

Telephone: (603) 224-9945

Cornell University has published a layman's reference entitled, "Gypsy Moth", a color illustrated brochure on various aspects of the pest. The publication covers such topics as hosts and damage, description, life cycle, natural factors affecting gypsy moth populations and control strategies. "Gypsy Moth" (Informational Bulletin 188) is a Cornell Cooperative Extension publication and can be purchased for \$2 per copy with discounts on quantity purchases. Orders should be sent to:

Distribution Center - FG  
7 Research Park  
Cornell University  
Ithaca, New York 14850

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## WE VALUE YOUR OPINION

The GYPSY MOTH HANDBOOK SERIES was developed during the Expanded Gypsy Moth Research and Development Program as a vehicle for the quick transfer of Program results to users. The Series proved to be extremely popular and many of the Handbooks are still requested today. Currently, however, most of the Handbooks are no longer available, and of those that are, supplies are very limited.

Forest Pest Management would like to poll you readers in order to find out if there is a real need to reprint or revise any of the Handbooks. Please take the time to review the Handbook Series listed below and check off in the appropriate space whether or not, in your opinion, a reprinting or revision of each is necessary. If you select a revision of any of the publications, we would greatly appreciate your comments about how and what to revise in the Handbook. This page and your comments should be sent to:

Robert D. Wolfe  
USDA Forest Service  
Forest Pest Management  
370 Reed Road  
Broomall, PA 19008

Thanks for your help!

<u>Handbook</u>	<u>Revise and Print</u>	<u>Reprint Only</u>
1. Defoliation by the Gypsy Moth: How it Hurts Your Tree	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /
2. Major Hardwood Defoliators of the Eastern United States	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /
3. The Gypsy Moth: An Illustrated Biography	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /
4. The Homeowner and the Gypsy Moth: Guidelines for Control	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /
5. Predators of the Gypsy Moth	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /
6. Technological Developments in Aerial Spraying	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /
7. Diseases of the Gypsy Moth: How They Help to Regulate Populations	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /
8. Selected Parasites and Hyperparasites of the Gypsy Moth, with Keys to Adults and Immatures	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /
9. Classifying Forest Susceptibility to Gypsy Moth Defoliation	/ <input type="checkbox"/> /	/ <input type="checkbox"/> /

10. Using Pheromone Traps to Detect and  
Evaluate Populations of the Gypsy Moth

/ \_ /

/ \_ /

11. Judging Vigor of Deciduous Hardwoods

/ \_ /

/ \_ /

12. Gypsy Moth Egg-Mass Sampling with  
Fixed- and Variable-Radius Plots

/ \_ /

/ \_ /

Comments (on revisions, how and what should be revised?):

MAILING LIST UPDATE

Once again it is time to update the Gypsy Moth News mailing list. All names currently on the mailing list will be purged unless we hear from you. Please fill in the information below and return to:

Gypsy Moth News  
USDA Forest Service  
Forest Pest Management  
180 Canfield Street  
Morgantown, West Virginia 26505

Remember, if you want to continue receiving this newsletter, then you must notify us at the above address. Thanks for your cooperation.

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Name(s) and address(es) of others who you know would like to receive this newsletter.

Comments: Please comment on the content, timing, scope, etc., of Gypsy Moth News. How can it be improved?



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